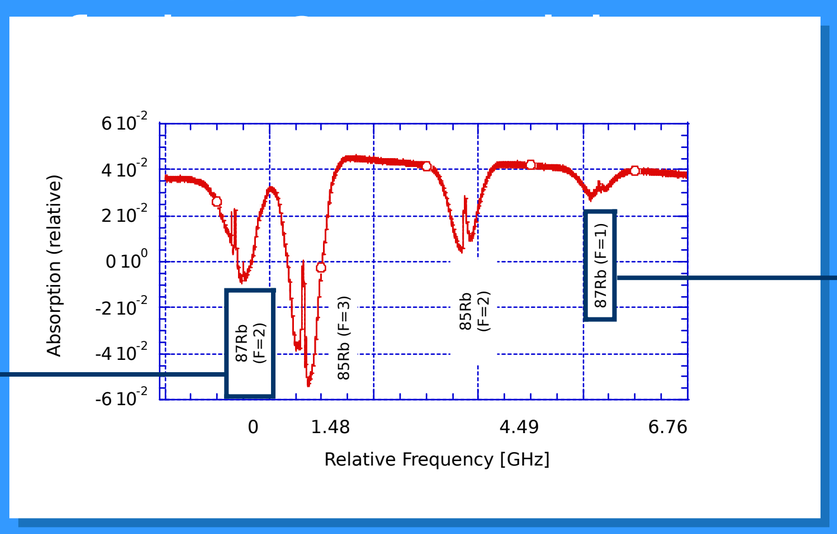
NRL's Integrated Atom Optics

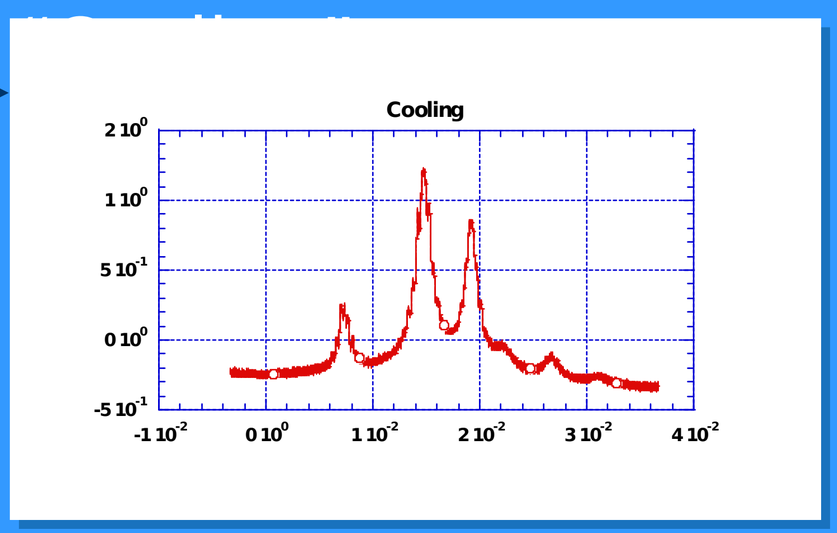
Laser Cooling & Trapping

Fun Oh (Code 7215)

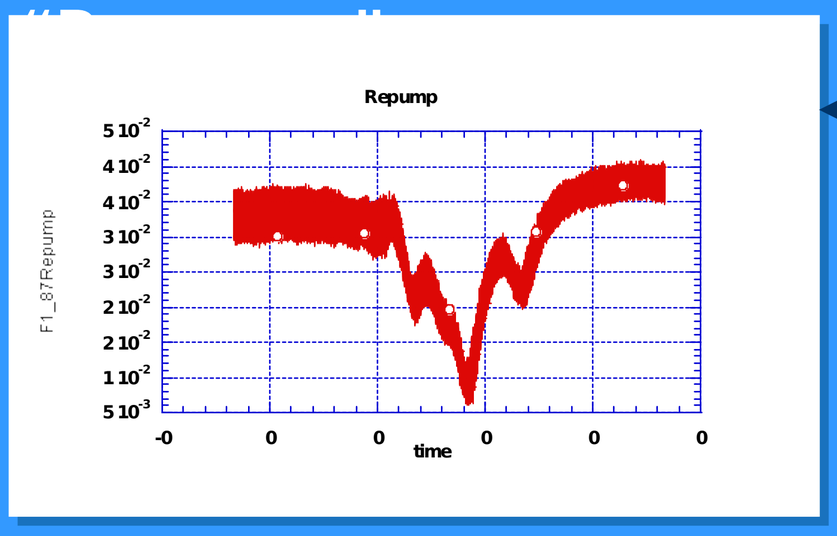
Saturation Absorption Spectrum

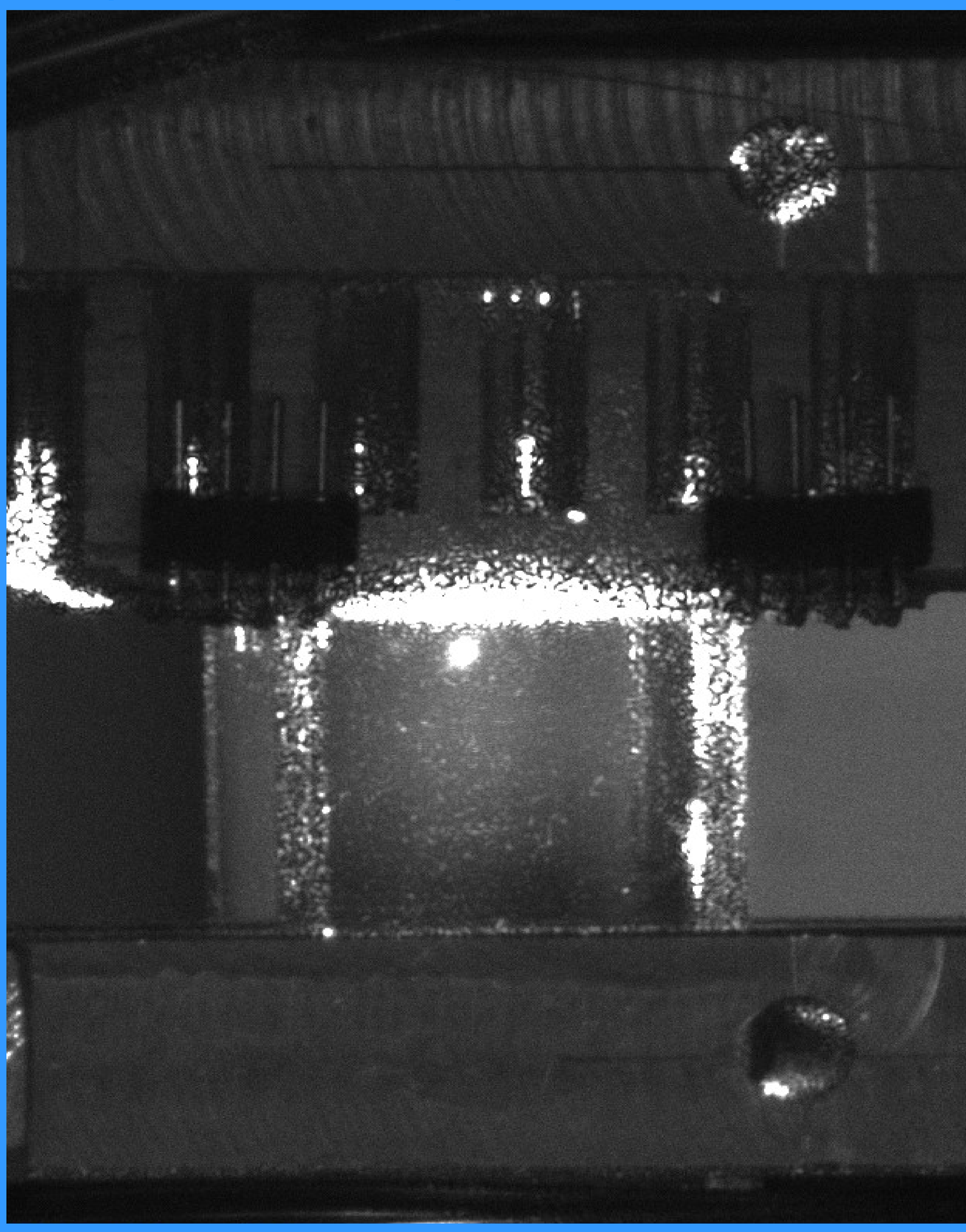


87Rb F=2

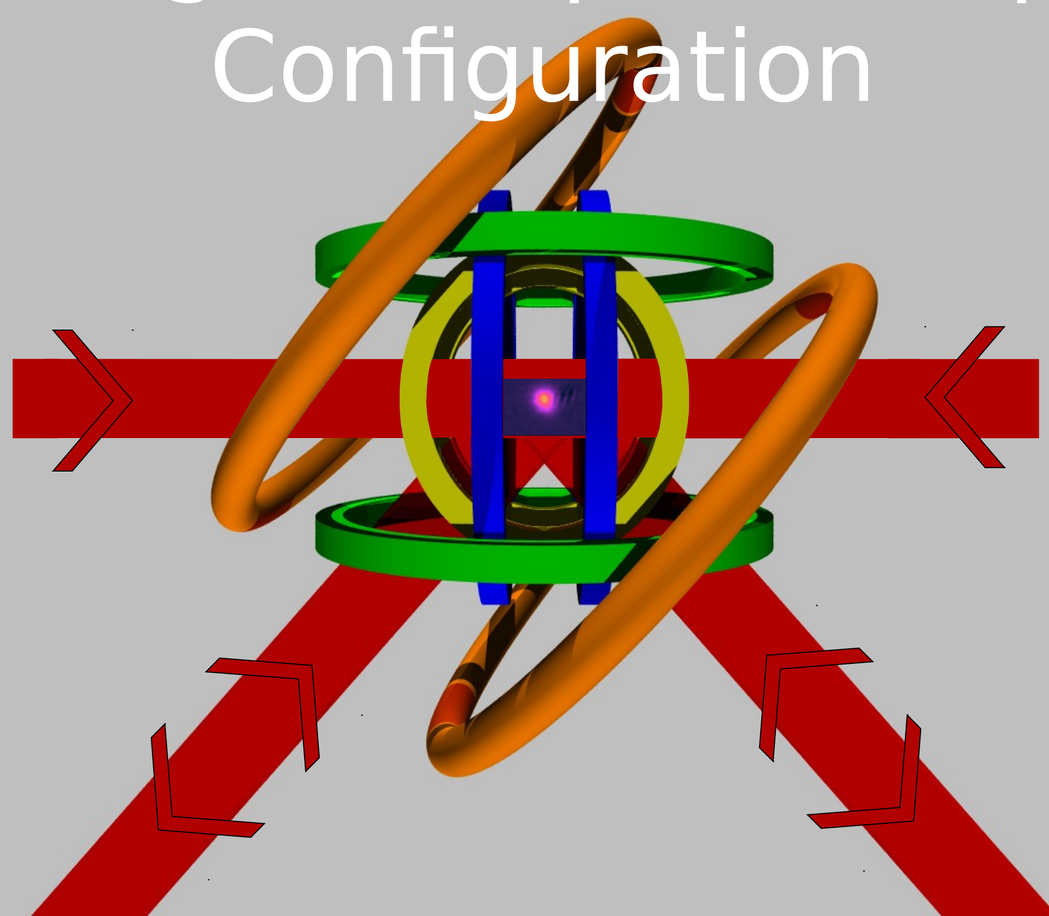


87Rb F=1





Magneto-Optical Trap Configuration



Summary

NRL's Integrated Atom Optics Program achieves its first chip scale Laser cooling with counter propagating laser beams and magnetic trap allowing formation of cold Rubidium87 atoms. The "ball" of bright sphere called the "Magneto Optical Trap" above contains approximately 6-7x10^6 atoms at ~200uK. From here, it is possible for formation of Bose-Einstein Condensation which further drops the